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ABSTRACT

Papers from a media leadership conference are presented in this volume, as well as a foreword, a list of conference coordinating committee members, a message from the director of the council, and the conference agenda. Papers from the three conference general sessions are: "Status of Computer Technology in American Education" by Richard G. Nibeck; "Electronic Futures" by George Jensen; "Down the Road a Piece: The New Communication Technologies and their Impact on Education and Training" by John Strange. Four mini session papers on practical applications to leadership are also included: "The Need for Computer Literacy" by Terry Countermine; "Electronic Advising Support Using Microcomputer-Generated Records" by Rick Daughenbauch; "Interactive Video: A Microcomputer and Video System" by Ron Trice; and "Word Processors to Solve Administrative Problems" by Dan Wright. Also included are descriptions of the University of Alabama's Sterne Library automated library system and of Project BEST (Basic Education Skills Through Technology), a cooperative effort involving the planning and use of modern information technologies to improve the effectiveness of basic skills instruction. Appendices provide resources compiled by the educational technology section of the Florida Department of Education, including computer resource lists, and lists of computer journals, software vendors, software catalogs, and microcomputer manufacturers. A list of conference participants, and council officers and delegates concludes the document. (LMM)

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SRMLC

BLACK BOXES
THE DEVELOPING WORLD OF MICROCOMPUTERS

CONFERENCE REPORT

SOUTHEASTERN REGIONAL MEDIA LEADERSHIP CONFERENCE

BIRMINGHAM, ALABAMA
FEBRUARY 25-27, 1982

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CONTENTS

Foreword v

Conference Coordinating Committee vi

Message from SRMLC Director vii

Program of Activities viii

Pictures ix

FIRST GENERAL SESSION

Status of Computer Technology in American Education 1

SECOND GENERAL SESSION

Electronic Futures 4

THIRD GENERAL SESSION

Down the Road a Piece: The New Communication Technologies and Their Impact on Education and Training 8

PAL MINIS (Practical Applications to Leadership)

The Need for Computer Literacy 17
Electronic Advising Support Using Microcomputer Generated Records 19
Interactive Video: A Microcomputer and Video System 21
Word Processors to Solve Administrative Problems 22

Sterne Library Automated System (Tour B) 24

Project BEST 25

Helpful Resources, Compiled by the Educational Technology Section, Florida Department of Education

Computer Resource List 26
Computer Journals 29
Software Vendors 30
Software Catalog List 31
Microcomputer Manufacturers 33

Conference Participants 34

Officers 42

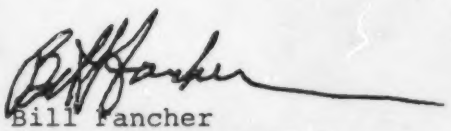
SRMLC 1983 42

Council Delegates 43

FOREWORD

This report is the result of the efforts of a number of dedicated professionals who planned and coordinated the Southeastern Regional Media Leadership Conference at Birmingham, Alabama. The intent of the conference was to introduce the participants to the emerging world of microcomputers through the cooperative efforts of competent individuals in the commercial as well as educational areas. The planning committee foresaw that the information presented at the conference would be obsolete (to some degree) in a short time due to the rate of development in this day of "high technology." Yet it was felt that by working together much could be implemented that would help media leaders from the Southeast advance personally and professionally.

It was a pleasure to be involved in planning this conference. Thanks to the coordinating committee and the participants it is my feeling the conference met its objectives.



Bill Fancher
Conference Coordinator

CONFERENCE COORDINATING COMMITTEE

STEERING: Bill Fancher, University of Montevallo, Chairperson
Don Clayton, University of Montevallo
Pat Ernest, University of Montevallo
Nina Martin, University of Alabama
Dan Wright, Auburn University

CONFERENCE PROCEEDINGS: Mary Sue McGarity, University of Alabama in Birmingham

HOSPITALITY: Eloise Kirk, Alabama State Department of Education
Jane McRae, Vestavia Hills High School

PHOTOGRAPHY: Ray Jones, Alabama State Department of Education

RECORDING: Mary Sue McGarity, University of Alabama in Birmingham
Betty Beal, Jefferson County Schools
Kathleen Mikan, University of Alabama in Birmingham

REGISTRATION: Geraldine Bell, Birmingham City Schools
Terry Countermine, Auburn University

TOURS: Jane McRae, Vestavia Hills High School
Tyronne Webb, West End High School

VENDORS: Dan Wright, Auburn University

Educational Media and Librarianship
607 Aderhold Hall
The University of Georgia
Athens, Georgia 30602

404-542-3810

February 25, 1982

Dear Conference Participant:

As Director of the Southeastern Regional Media Leadership Council it is my priviledge to welcome you to the 13th Annual SRMLC Conference. We feel that this year's conference theme, **"Black Boxes: The Developing World of Micro-computers,"** is both a timely subject and a highly significant competency area for media educators.

SRMLC is indeed grateful to the media professionals from The Great State of Alabama for their invitation to host this year's conference. As anyone knows who has ever been responsibile for organizing a successful professional meeting, it takes a high level of effort and teamwork from many dedicated individuals to put on a conference of this caliber. I am sure you join me in extending a well deserved **THANK YOU** to Dean William Fancher, Chairperson of the Program Committee, and to his faithful committee members, Dr. Dan Wright, Dr. Nina Martin, and Dr. Pat Ernest.

I also want to acknowledge a special kind of "behind the scenes dedication" by Dr. Mary Sue McGarity, Chairperson of Conference Monograph Committee. Long after the rest of us have gone home she, and her committee, will spend hours transcribing tapes, writing synopses, and publishing our conference monograph. This publication should be very helpful as a review and reference source. For those persons who were unable to be in Birmingham, this publication should help to inform them about important things they missed.

In closing I want to express my appreciation to the Council members and to the media professionals of the Southeast who gave me the opportunity to serve as Director of SRMLC. It has been a very plesant experience and I hope a productive one. I am sure Dr. Stan Huffman will do a fine job as your next Director and if he gets the same kind of support in North Carolina as I received from the Alabama group then I am sure we have a fine conference experience ahead of us in Raleigh, March 1983.

Sincerely yours,

C. Hugh Gardner
Associate Professor of Media

an equal opportunity/affirmative action institution

SRMLC ANNUAL CONFERENCE: 1982

"Black Boxes: The Developing World of Microcomputers"

Program of Activities

Thursday, February 25

11:30 A.M. - 3:30 P.M.	TOURS
	Tour A: Vestavia Hills High School and Pizitz Middle School, Computer Related Classes Vestavia Hills School System
	Tour B: Sterne Library and Instructional Resources Center (IRC) University of Alabama in Birmingham
1:00 P.M. - 5:00 P.M.	REGISTRATION
2:30 P.M.	COUNCIL MEETING
4:00 P.M. - 5:30 P.M.	HOSPITALITY, MEET AND GREET SESSION
6:00 P.M.	BANQUET AND FIRST GENERAL SESSION
	Presiding: Hugh Gardner, SRMC Director
	"Status of Computer Technology in American Education," Richard Nibeck

Friday, February 26

8:00 A.M. - 9:00 A.M.	REGISTRATION
9:00 A.M. - 9:45 A.M.	SECOND GENERAL SESSION
	"Electronic Futures," George Jensen
10:00 A.M. - 12:00 Noon;	
1:00 P.M. - 3:00 P.M.	LITERACY THROUGH HANDS ON EXPERIENCE: MICROCOMPUTERS AND WORD PROCESSORS
	A. B. Dick Company American CAlculator and Computer (Apple) Tandy (Radio Shack TRS-80) Xerox
3:15 P.M. - 4:30 P.M.	PAL MINIS (Practical Applications to Leadership)
	"The Need for Computer Literacy," Terry Countermine
	"Electronic Advising Support Using Microcomputer Generated Records," Rick Daughenbaugh
	"Interactive Video: A Microcomputer and Video System," Ron Trice
	"Word Processors to Solve Administrative Problems," Dan Wright
4:30 P.M. - 6:00 P.M.	BITS AND BYTES (Fund Raiser)

Saturday, February 27

9:00 A.M. - 10:00 A.M.	THIRD GENERAL SESSION
	"Down the Road a Piece," John Strange
10:15 A.M.	BUSINESS SESSION

Status of Computer Technology in American Education

Richard G. Nibeck

Deputy Executive Director
Association for Educational Communications
and Technology

I'd like to ask you what you did last night. It's like when somebody asks you how you are, you know good and well they're just waiting for the chance to tell you how they are. I built a computer last night! I assembled a microcomputer out of parts that cost $99.95 and I put it together in three hours. It is a Sinclair microcomputer.

We are just beginning to see the tip of the iceburg of a phenominal revolution. It has been reported that just slightly under fifty percent of all schools had some microcomputer equipment at the opening of school this past year.

An organization in Washington known as Educational Turnkey tracks changes in education. By extrapolating data that they have collected on innovations and intent to change in school programs, they are predicting that by 1985 ninety-five percent of all the schools in the United States will provide every student with some exposure to microcomputers every week of his schooling experience.

There are at least thirty school districts in the U.S. that already have micro programs written at every grade level and in every curriculum area operating this current school year. We already have five high schools that require computer literacy before one can graduate from the high school. It won't be many more years before it will be a college entrance requirement to have some familiarity with microcomputer language.

Now, what does all this mean? Does that mean you are going to go out and buy? I don't think you will go out and buy just to make the predictions come true. Watch the kids. Go out to the game rooms. See what they do after school. Watch a youngster who is playing with a computer, even if it's a gaming computer. Watch the fascination. Then, if you're lucky enough to see them get their hands on a microcomputer and see what they do with it, you won't be a doubter.

Media people have been innovators as long as we have had media people. They have been the people who have been looking for ways to improve learning, and most of you believe as I do that there is a way of improving learning with some of these devices. Let me recommend a book to you...Seymour Papert's Mind Storms. Have you read that book yet? Well, you'd better get hold of it because what Papert says is that an alternative to education is looming on the horizon, and if public education doesn't wake up, if institutionalized education doesn't wake up, kids are going to find an alternative way to learn. And that potential is here in the microcomputer. He has a great many other things to say. He says computers are going to do us in, anyway. I don't believe that.

On January 8, in Washington, D. C., the Justice Department announced that it was withdrawing its restraint of A T & T. With the removal of Justice Department restraints, computer technology and communications technology is in the free market.

The options that you are going to have for communications are going to grow astronomically. How many of you have heard of interconnect telephone companies? It's amazing that Ma Bell has been so secure in its service and so tight in its grip on the consumers that half of the electronic technology available to us today has never entered the communications field at all.

On October 19, 1981, AECT signed a contract with the Department of Education establishing a project to demonstrate high technology communications to American education. We were given $855,000 to use over twenty-one months to demonstrate to state departments of education that there are better ways to do things than they are now using. They couldn't tackle the entire educational system, so they focused on state departments of education, assuming that those are the legal authorities that you start with in making educational change. The project is known as Project BEST, Basic Educational Skills through Technology. The reason we are basic education is that this is where the money comes from. That means reading, writing, and arithmetic. Art, music and science (the only things we have left out) will benefit indirectly.

Project BEST will create a series of data banks which will probably be available very shortly to AECT members. We'll have data banks that will list magazines, current sale publications, books, resources that cite who's doing what kind of application of high technology. What we are going to be studying primarily is the microcomputer in action in schools. We'll also look at the laser video discs tied to microcomputers. We'll have information on hardware, software, and regional resource persons for use by the project staff. You can go to your state department and they can identify someone in your immediate region who can help with the problem.

We'll be developing a system of electronic mail. Who knows what electronic mail is? How many of you are in a mail system now? In a Florida conference it was discovered there are 15 independent mail services in the state of Florida alone. We are just now beginning to find out these things exist. Do you have any idea how many on-line data bases there are in the U.S. now? There are over 950 data bases. There are over a hundred and thirty in education alone. There are a number of them nationally, where you can access library information. There is a directory of computer-base services that can be accessed by electronic mail.

These things exist and mainstream education, for the most part, has not been participating. Through BEST we want to put education into the participatory mode.

What's happening now is almost frightening. The literature is phenominal. I haven't done so much reading since I was in graduate school as I've done in the last six months. And it's not going to stop. I have just a few bibliographies that I brought from one of your member organizations. Project BEST doesn't have its own bibliography yet of current magazines, current

hardware manufacturers, current software producers. It's now estimated that we have more than ten thousand titles of microcomputer courseware in existence. Of course there are not more than 500 that will run. But those titles are growing constantly.

I picked up Money Magazine that came this week. That's supposed to tell me what to do with the change I have left over. It was all about microcomputers. About kids 14 years old collecting $80,000 a year from their computer programs that they are selling. I have three kids. They scare me. That's because they're smarter about the computer than I am. I have two terminals at the house. I don't really own a computer, but we have access through my son's good graces. He has three accounts. He gives me his code book. I can work in any of these computers. He has been using computers for several years now. My little one is coming along the same way. That telephone line is on the computer day and night. We are going to have a separate, private line just for computers. Computers are going to win. Won't you take advantage of this technology to get in there and take control to make it possible for us to enhance our communication amoung people?

That's what Project BEST is going to do. It's going to become a people network through electronic mail and through telelecture systems with interacting video. We hope to put people back in a position where they are talking with people so that people with problems can talk with people who have answers. When it is over we hope there will be a lot of residual.

Electronic Futures

George Jensen

National Marketing Manager
A. B. Dick Company

The world of education and the world of work have many of the same problems in keeping up with developments in technology. In order to establish the size and scope of the electronics scene, we must look at the number of people who must be educated in it. There is a very important segment of the American population moving directly from the school's educational programs into the world of work each year but there are many people already out there who must be educated.

In this country there are 250 million people. Every one of them, to some extent, has an electronic literacy problem. Everyone must learn how to use electronic tools. So here is the real challenge of the '80s. How are we going to train and educate two hundred and fifty million people to use electronic tools? Now education has many problems and many jobs to do, and everybody's overworked already.

In a local paper last Sunday there was a cartoon. On one side it says "Defense Budget." Missiles and all kinds of electronic gear are listed. Over here on the other side of the picture is a school house propped up, cobwebs in its windows. "There's only one problem; we can't find anybody smart enough to operate it." How about that for an issue?

What is our problem today? For lack of a better term, I call it the information imperative. Things are changing so fast. The information we have is going out of date so we tend to make bad decisions. We worry more, don't we? Who are the chief competitors of American business and industry? How about the Japanese?

The basis of the problems I have identified as the information imperative is the plain and simple fact that the Japanese have now developed information-gathering systems and analysis systems that are the best in the world. We can talk about productivity. We can talk about anything else, but what the Japanese really have is an information-gathering system that puts them in a non-competitive situation.

What can we learn from American businessmen? They are going to Japan to find out what the Japanese are doing. Are American educators going there? That's what we must do.

If any of you are interested in looking at the entire scope of the Japanese economy, culture, and all its organizations, you should read Japan as Number One: Lessons for America by Ezra Vogel. How has Japan beaten us in the production of products? It all relates to information. Their information gathering system works.

How did we get so far behind? During World War II until about the end of the Sixties, there was no country in the world that was more efficient

or more productive than the United States. We were 'way out in front, in front of everybody. What did the Japanese do? They watched us. They were tourists with cameras and shopping bags. Do you know what their basic information-gathering devices were? Always, they had their cameras. They asked questions for hours and hours on end. I'm sure you've been to trade shows and other expositions and exhibits where Japanese were in attendance. It takes twice as much literature for them than anyone else. One year the same three Japanese folks were in our exhibit for three days!

Let's look at productivity. In 1981 the average number of cars produced in Japan per unit of labor was 45. Now the newest and best Japanese automobile factories produce 70+ cars per unit of labor. The last year that U. S. automobile production was in full swing was 1979. The number of cars produced per unit of labor was eleven. See what that means? For every automobile assembly line worker out of work, there are six to nine more people out of work. Last week the number was around 300,000. Every one of those took six or more off the job with them. How did Japan get ahead of us? They did it by coming to the U. S., looking at what we were doing right, and looking at what we were doing wrong.

In Japan everybody is hired for life and retired at fifty-five. That sounds nice, doesn't it? Think about the obligations placed on the recruiting and hiring process. It's not just a matter of interviewing somebody or testing somebody. It's a lifetime commitment. When you hire people for life, what should you do? Try to find out what they can do well and try to give them a whole lot of it to do. How's that? Let's find out what people can do well and give them a lot of it to do.

For many years I thought our pay scale was much higher than Japan's. Now the per-hour rate may be, but benefits available to workers there are incredible: housing, vacations, health care, etc. Consequently, their cost for automobile production per labor hour is no lower than ours. One thing that increases productivity is the use of robots. Eighty percent of the industrial robots used in the world are in Japan. In visiting the most up-to-date automobile factory in the U. S., they found jobs that were really demeaning. They asked themselves, "Why don't we build machines to do that?" They want people to think, and plan, and perform the critical aspects of looking at information.

Japanese work on the basis of cooperation, consensus, and unanimity, whereas we have gotten where we are on the basis of conflict and adverse relationships. Japan has 125 million people. In the U. S. we have 250 million people. The number of attorneys compared to population size gives some indication of how we work with conflict and they work with consensus. In Japan there are 12,000 attorneys. That's one attorney for every 10,000 people. In the U. S. there are over six hundred thousand attorneys. We have one attorney for approximately 400 people. Do you think I'm overstating the quantitative measure of the way they work together and we work in conflict?

What else do they do? In Japan the employees actually have something to say about the quality of the product. Every company in Japan competes for the Denning Quality Control Award, named for an American quality control consultant, Edward Denning. The second most famous consultant in Japan is

Peter Drucker. He has been warning us about the Japanese for years. People ask, "What about unions?" They are all union, but those employees are also part of the company.

Now then, what happens when they send people away to college? They establish person-to-person relationships so they can get access to information. What's the purpose? They don't have any alternative, folks, 125 million people with a territory the size of Montana, with no raw material resources to speak of. What do they have to do? They must buy raw materials in the open market and convert them into products that they can sell to feed and clothe those people and keep growing. Every organization, every institution is dedicated to producing the best, most reliable products in the world. As a result, that whole country is dedicated to education.

We must learn how to handle information better so that we have the capacity to make better decisions about the alternatives, the problems, options, and opportunities we face in life. In Japan they are doing a good job with information and its use. When their ship-building industry was over-expanded it took only 90 days to stop that industry's over-production. Ninety days!

Probably the most critical fact about what is happining in Japan is that everybody is in a continual state of education and re-training. It has become their national objective. They must have it in order to compete. How do you feel about that? Does it make you up-tight a little bit? Yes, it sure does. It does the same for me. I went along for years saying if I could be fifteen percent more productive next year than I was this year, I would double my capacity to do work and function and produce better every three years. Compare my goal of 15% improvement with the fact that I must be 400% better just to stay even with those rescals! And if I want to be as good as their best, I've gotta be 700% better. I must be better in handling information and gathering information. What does all this have to do with electronics? These systems, these products offer us a way.

I'll give you an example. Ten years ago we ran a two-week workshop for a Yankee university for business and office education teachers. We asked them, "What is word processing?" Nobody knew. We showed these people what it does. Everyone was upset and angry with me. They thought their jobs were at stake. The first typing classes went into schools a hundred years ago. Do you know what the average student is capable of doing after nine months? Forty words a minute, eighty words a minute in shorthand. What is it today? Forty words and eighty words. What happens when that's all people can do? They must have better tools. And that's what electronics really is.

We talked about the problems in typing productivity. Errors and changes slow one down. What if that didn't have to be a problem anymore? Mistakes are no problem and changes are easy? Tooling the final copy is done at 540 words a minute. A 900% improvement in output. Just a tool. By the end of that day, those people were very comfortable and very aggressive about word processing. Today, everybody in that field of study knows about word processing.

No matter what the technology is, it will require the electronics literacy that I'm so worried about. I'm worried about it for my wife and our

kids and everybody in this country. Much will depend on what we can do to help bring people along in learning to use tools. How about a microwave in the kitchen? It's a tool. My wife went back to work and I'm trying to learn how to run things around the house. The house is full of tools.

Several years ago Dr. Dan Wright came to Chicago. He said, "George, I'm here in Chicago to buy a minicomputer to keep track of the film library at Auburn University. When I get through downtown at the computer show, I want to see word processing. Here is what I want. I've got this information on a piece of paper, and I want to get it up on the screen. I want these girls to show me how to change the data. I want to learn how to do it so I can teach my work-study students how to operate the system." I asked him how long he had to train them? "Fifteen minutes maximum," he answered. The point I'm making is that Dan is a user now. He knows word processing equipment. He has word processors all over the place. He certainly knows a lot more about how to use his than we do. Now Dr. Wright comes to AB Dick to teach us how to use our own equipment.

As users begin to talk to each other, whole new applications begin to develop. It's the peoples aspect that's important because people give this electronics technology all of its productivity. Look out for the jargon and ask lots of questions. The key is asking questions and finding out what the answers mean.

What about the future? Find ways to use this electronic technology and tooling to solve your own problems. Go to conferences like this and talk to people. Find out what they are actually doing. It's going to be our attitude about finding ways to cut cost and increase productivity that will help us in competition with Japan. The cost of the electronic tools is coming down.

What's going to be the role of media people in all this? As far as I am concerned, you folks are going to play the most critical role in helping the people in this country to raise their level of information handling and processing of knowledge. Our country's future, our way of life is going to depend upon how well each of us is able to use the new technology in our personal lives and in our work.

Down the Road a Piece: The New Communication

Technologies and Their Impact on Education and Training

John Strange

Futurist, Professor, and Dean
College III
University of Massachusetts (Boston)

I understand that most of you have had a chance this week to actually play with a microcomputer. How many of you have looked inside a microcomputer? One of the things that you might have seen when you looked inside was a board, or card, with what they call caterpillars, or bugs, on it. Inside each of those is the real gimmick, or invention, behind the personal computer that makes it all possible.

I will pass around a little piece of silicon so that you can actually hold in your hand the operating part of a computer. On this particular one there are about 14 little squares, each one quarter of an inch by one quarter of an inch. Each one of those squares houses an entire microprocessor. So, if you hold this in your hand you have actually held 14 different microprocessors in your hand at one time. One of the major impacts of the new technology is the reduction in size. Each of those little squares contains the equivalent of 40,000 switches. That is an old model made in 1979. A current version, recently announced by Hewlett-Packard, will put 400,000 of those switches in essentially the same amount of space. We will see a radical change in the amount of information that computers can hold as well as the speed with which they can process information.

The second thing that I am holding in my hand and which will also have a major impact on education and training is a laser video disc, about the size of a 12 inch record. It was not made by RCA but rather according to the Phillips, Magnovox, or Pioneer standards. You can't damage it unless you carve your initials on it or paint it. Painting it would destroy it because it is actually read by a laser. On each side you can put 54,000 frames of information, 54,000 slides or 54,000 pages of books. In fact, if we were to take the entire collection of the Library of Congress and put a picture of each page of every book or document in the Library of Congress on laser video discs, the entire collection could be stored in a space one disc thick from floor to ceiling along a wall of this room.

It is easy to see the power of gathering information into a very compact space. These are two important developments.

The laser video disc can interact with a microcomputer so that any part of the disc can be located within one second. It can be set up in such a way that people can respond to questions and go to and from particular positions on the disc. It can be played in slow motion. It can be moved backward or forward. It is under the control of the user. It is totally non-destructable. This is a medium that is immediately useful for the public-at-large in many different contexts.

MICROCOMPUTER + LASER VIDEO DISC= THE MOST POWERFUL EDUCATIONAL TOOL IN HISTORY

Imagine an encyclopedia on a laser video disc. You could call up the section on Beethovan and it says you can get text for several pages, or you can make a selection to actually hear a bit of any of Beethovan's symphonies. Pick #1 through #9 and you can see pictures while you hear the symphony. Or, you might move to a section about Lincoln's Gettysburg Address. You are asked, "Would you like to read the Gettysburg Address, or would you like to hear it.?" You indicate that you would like to hear the Gettysburg Address. While it is being read by Carl Sandburg you see the text. Suddenly you notice that Carl Sandburg is not reading what is on the screen. Several words are changed or left out and you think perhaps Mr. Sandburg had gotten rather old and wasn't able to read very well. The presentation ends. Another voice comes on and says, "You might have noticed that Carl Sandburg did not read what you saw on the screen. The reason is that there are 14 different versions of the Gettysburg Address and the one that you saw on the screen is the one that is normally accepted as that which was delivered by Abraham Lincoln. That is not the version that Carl Sandburg, a Lincoln scholar, believes that he delivered, however. Mr. Sandburg read to you the one that he believes to be the true version.

You can easily see the power of that kind of presentation. If you were to take the particular disc that I have and put it into a player which would cost about $545.00, you would be able to see and hear Craig Claiborne demonstrating many of his recipes. There are two audio channels. You can have audio in various languages German, Spanish, Japanese, Arabic, beginning or advanced.

The laser video disc is an incredibly powerful tool. When it is linked to a computer, like an Apple, you have an even more powerful tool with which to engage in instructional activities.

IT WON'T HAPPEN

We can expect a lot of people to say none of this will really happen here. The technologies are incompatible. The systems are too expensive. People will resist. Software is not available. CAI is dull and dehumanizing.

One of the most important books I have read on the subject is Seymour Papert's Mindstorms: Children, Computers, and Powerful Ideas. Papert is a professor of computer science and education at Massachusetts Institute of Technology who has developed a new language, Logo, which can be used on the microcomputer by children as young as three, four, and five. My daughter, a senior in high school, read this book and wrote a book report on it. In the report she wrote that instead of taking ten years for the microcomputer to revolutionize the world, it will take forty years because people are slow to change. A few weeks ago, however, I came home to find her using the word processor that she had been resisting until now. What was she doing? She was filling out applications for college. She discovered that she could write a letter to a college and change all the references to that college with two strikes of the keyboard so that the same letter could go to X College, Y

College, and Z College. The next day she brought over eight of her compatriots. While they were there one of the fathers also came over for a demonstration. So, although Catherine had suggested that we would resist, she was not one of those resisters.

"The software is not available." I think we will see a lot of software coming out, not because of what we do, but because of what the young people are doing. My son, who is 21, is currently involved in the writing of a non-violent game. He is writing it for the Apple, the Atari, and Radio Shack's TRS-80. He says, "If I can sell my game to only 10% of the people who own Radio Shack and Apple Computers today, and if I make only $5.00 on each of those disks, I can make about $500,000.00." That's estimating there are about one million owners today. Actually, there are more than that.

Many people have argued that computer assisted instruction is dull and dehumanizing. I think that has been the case in the past but as you get a chance to use Logo you will see that it is far from dull. This is true, partly, because Logo takes an entirely new direction in terms of computer assisted instruction. Instead of the computer controlling the learner, the learner controls the computer. That is the philosophy that Papert expounds.

A demonstration making use of the graphic mode in Logo shows how very easy it is to develop a program. In the graphics mode the Logo turtle, which was once an actual robot, is a graphics cursor. As you can see in the demonstration, it can be instructed to move around the video display, draw or erase lines, and use different colors. Instead of using a language in which you are presented with 200 different words, which must be learned, there are a few very basic instructions and you make the language as you go. This is an important learning device for children. CAI need not be dull and dehumanizing at all.

We will see major changes come rapidly as a result of the use of the new technologies by the kids. In fact, Children's Crusades will be responsible for making sure that the new technologies actually are adopted. The first Children's Crusade was back in 1947 or 48. How many of you remember "Mad Man Muntz"? He sold many television sets. At the time that he began selling television sets there was a great debate going on in the United States as to which particular technology to adopt for television. "Mad Man Muntz" decided that he would not continue to debate about the technologies. He started manufacturing televesion sets, and to whom did he sell them? Not to parents but, rather, to children. He advertised on "The Lone Ranger," "The Green Hornet," and other kids' programs. The kids sold their parents and other kids. That's what will happen with the new technologies. They are going to spread like wild-fire through the high schools and grammar schools and, ultimately, we will be getting them in higher education.

The second Children's Crusade began in 1966 with "No Smoking" campaigns and the third in 1980 with microcomputer use. Since 1980, microcomputer costs have been reduced from 1/15 of the average annual income to 1/80 of the average annual income.

The Apple manufacturers say they would like to make the computer as personal as the bicycle. There were 10 million bicycles sold last year. They

would like to sell 10 million personal computers by 1985. Radio Shack will give you, to distribute to your students, as many copies of the little comic book, Superman in "Victory by Computer," in which two teenagers are sitting at their little TRS-80 and solving problems as rapidly as possible, in order to provide Superman with information to save Metropolis. There is also some interesting information in it about the history and development of computers.

The reason I think these new technologies are going to take hold is not only because of the kids but, also, because they are personal. They are mine and they are yours. They are in our homes and in our libraries. They are where you do not have to get a number and be registered at the central computer center. They can be used with programs that will be available at an inexpensive cost. They will be inexpensive because, with those millions of computers out there, there will be a great market for people to write programs and develop software. If you write a program for a large computer, how many likely buyers do you have? 100 or 200? It would not be worth your time. Now, Logo, an incredibly powerful program that can be used in hundreds of thousands of ways as an instructional tool costs only $150.00 to run on the Apple. So, again, we see the impact of price on the microcomputer and new technology.

ECONOMIC, SOCIAL, AND POLITICAL IMPLICATIONS

What are some of the implications of all of this for education and society as a whole? Not all of them are highly positive, but lets look at employment. We cannot ignore the fact that microcomputers are going to radically affect the ways in which jobs are distributed in this country, what jobs there will be, and how people are trained for those jobs. This will be primarily the result of the introduction of new equipment and the introduction of robots as manufacturing tools. An example of projected robotization: The president of Fiat has said that he can make as many cars as he makes today, when he is fully robotized, with 10% of those workers currently employed. Ninety percent of the current work force will not be necessary! This would make a major impact in Michigan. When we begin to look at where robotization is taking place, we see the United States beginning to move rapidly in the robotization of heavy industry, dirty industry, and dangerous industry. The Japanese, however, are ahead of us in the implementation of robots. They are robotizing all sorts of manufacuring procedures. It is not inconceiveable to me that the United States could be making less than 10% of the motor cars that are made in the world in 1990.

We are also going to see new products. When National Cash Register moved from the mechanical register to the electronic cash register, they were able to make that new product with two-thirds of the employees used earlier. Everything with moveable parts is subject to being replaced by electronics. It has been estimated that the work week will be reduced from 40-hours to 20-hours by 1990, and certainly by the year 2,000.

Throughout history there have been changes in the meaning of work. Ancient man had no concept of "work," "free time," or "leisure." He engaged in activities to stay alive virtually all of his waking moments. Our Greek

and Roman heritage introduced work as a clearly set apart concept. The Protestant ethic made us think "work" and "play" were opposites. In some cases "play" could be equated with "sin."

If we are going to understand education and work we must distinguish job, that activity which brings us income, from work itself as a part of the process of helping people accommodate to a new work week, or job week. We're going to have to expect less time at work, more leisure time, radical changes in jobs, and increased pressure and problems around, and at the time of, expected retirement.

Political implications include the rise of Japan. It is not inconceivable that the United States could be second to Japan as a political and economic power by the year 2,000. There will be organized resistance to technologies. There will be a widening gap between industrialized and non-industrialized nations. There will be a radical redistribution of wealth and power. We will see decentralization of some decision making and possible decrease in repressive governments. It is difficult to keep people who have readily available information in a state of repression. There will be a radical restructuring of the international pecking order.

EDUCATIONAL IMPLICATIONS

The Transformation or Replacement of Traditional Educational Institutions. Now, individuals produce courses which are delivered through educational institutions to classes. In the future, materials of instruction will be produced by experts for delivery through many different delivery systems rather than traditional classes. (Figure 1.)

In Mindstorms, Seymour Papert refers to Piaget's theory of learning: we learn best when we learn naturally, in the environment. He suggests that computers can provide an environment for learning that would enable us to do away with classrooms, which he says are inefficient substitutes for that natural environment. He also suggests that if schools and colleges do not radically change the way in which they approach learning and teaching, they could disappear. They must reform or be replaced.

We will see new ways of delivering instruction directly to consumers who are learning. They will buy a video disc and be instructed through that system. Robert Fuller has done some interesting work at the University of Nebraska at Lincoln. He has used films of the Tacoma Narrows Bridge collapse in 1940 to develop a teaching tool for physics at three different levels: knowing no math, knowing some algebra, and knowing the principles of physics. It is to be released by John Wiley on May 1st.

IBM recently reduced the cost of the selectric typewriter for the first time. We will continue to see reductions in typewriter costs as they are replaced by word processors. What are they? They are nothing more than microcomputers with slots for disks.

Think about this: all over the country we have learning stations, in place, paid for by corporate funds. In order to use them as instructional

DELIVERY OF INSTRUCTION

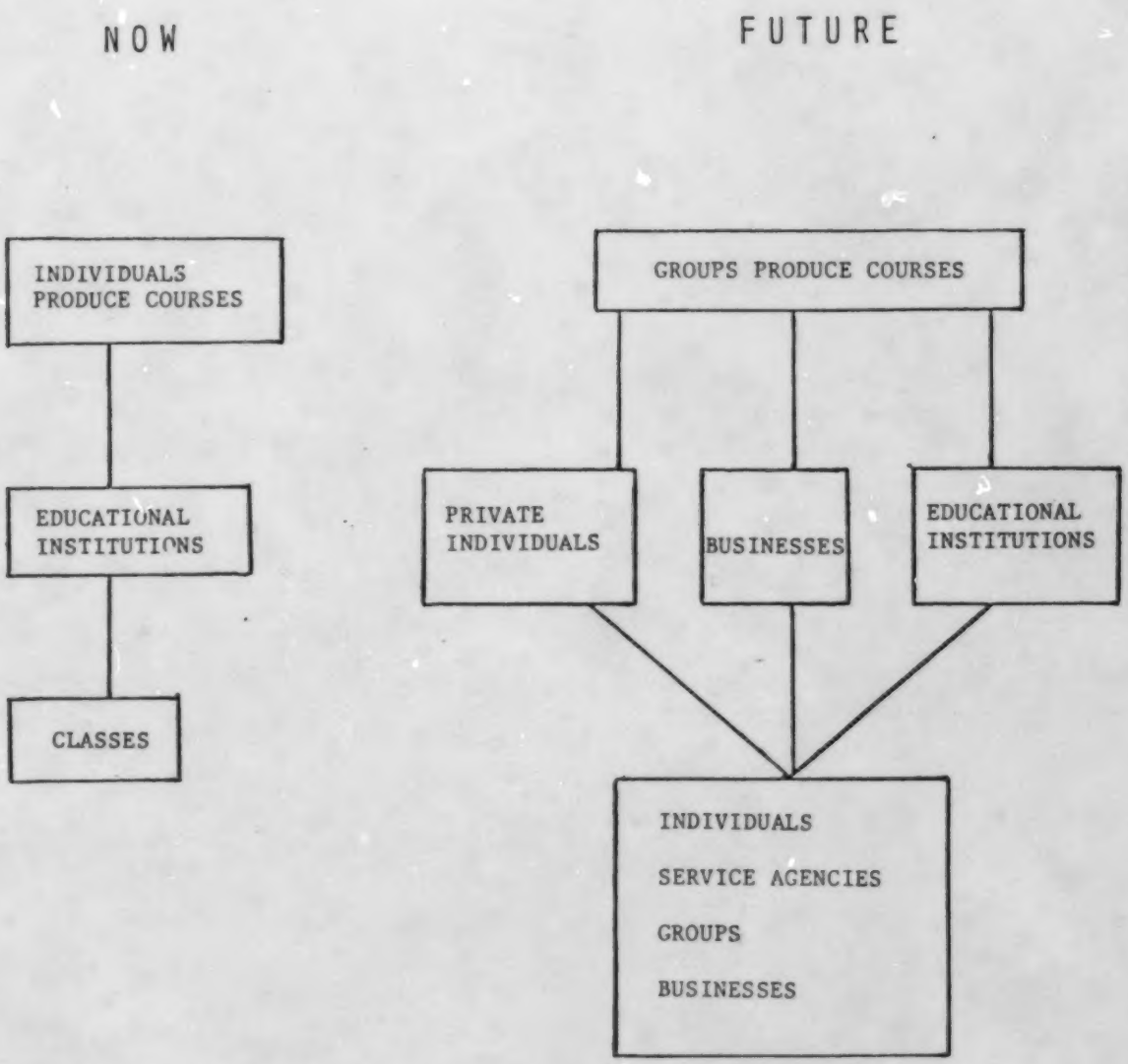


Figure 1. Educational Implications

places, all we have to do is create the software that will fit into those slots. Then, people can use them for instructional and training purposes before work, during lunch, after work, or even during work.

In the primary and secondary schools of Boston there are hundreds more microcomputers than at the University of Massachusetts in Boston. Some of the lower middle class high schools in Boston have a microcomputer in every classroom and plans for one in every primary classroom. Anchorage, Alaska, recently purchased 1,500 microcomputers for primary and secondary schools.

Business and Private Entrepreneurs Will Be A Major Provider of Educational Services. Actually, they already are. They will be even more so.

Acquisition of Factual Information Will be Less Relevant. Most people in liberal arts disciplines consider themselves "guardians of facts." Teachers, lawyers, and physicians are the three main professions organized around facts and the acquisition of facts which will be most affected by this change. Already you can buy a video disc with pictures and an index of all patents ever registered in the U. S. Patent Office.

Teaching of Cognitive Skills Will Be Improved. Cognitive skills are most important to success at work. They include the ability to understand complexity; information processing such as learning, recall, forgetting, reorganizing and relearning; conceptualizing, or being able to analyze and synthesize; and the ability to learn from experience and translate observations from experience into a theory that can be used to generate behavioral alternatives.

Libraries and Information Services will be Radically Altered. There will no longer be a need to be concerned about how large a collection is but, rather, how it can be used to take advantage of new technology.

Decentralization of Computers Will Improve and Extend Use of Computers. This will bring about radically increased opportunities for the physically handicapped. Counseling services will be improved. There will be an expansion of emphasis on the education of adults.

New Clienteles Will Be Served. These will include adults, distance learners, placebound, timebound, and spontaneous learners who want to learn when they want to learn.

Changes in Values and Jobs Will Necessitate New Curicula. The legitimacy of our traditional educational institutions will be challenged.

WHAT DO WE DO?

1. Avoid alignment with resisters.

2. Establish linkages with business and industries.

3. Prepare to invest time and money.

4. Create cooperative working arrangements, pool resources with other colleges and schools.

5. Prepare faculty for future through consciousness raising, training, creative opportunities, and new rewards systems.

6. Examine our curricula and provide for computer literacy, preparation for new jobs, preparation for radical social changes and values.

7. Learn as much as possible about microcomputers. Use a microcomputer and video disc player. Read to bridge the gap and cut away barriers. An "old fashioned reading list" is recommended. (Figure 2.)

Additionally, we must identify and address the values questions that arise from the microcomputer revolution. It is our responsibility to engage in that process.

Old Fashioned Reading List

Christopher Evans *The Micro Millennium*
Viking Press, 1980
(Canada and U.K.--*The Mighty Micro*)

Colin Norman *Microelectronics at Work: Productivity and Jobs in the World Economy*
World Watch Paper 39 October 1980
(Worldwatch Institute
1776 Massachusetts Avenue
Washington, D.C. 20036 USA)

Adam Osborne *Running Wild: The Next Industrial Revolution*
McGraw Hill Paperback 1979
630 Bancroft Way
Berkeley, California 94710

Seymour Papert *Mindstorms: Children, Computers, and Powerful Ideas*
Basic Books, 1980
New York

Figure 2. Reading List

The Need for Computer Literacy

Terry Countermine

Department of Educational Media
Auburn University

There are several different views of what constitutes computer literacy. One view is that a computer literate individual must be capable of programming, or writing programs for a computer. With the proliferation of personal computers and accompanying software which utilizes various computer languages, we have seen the development of another definition: the ability to use computers comfortably for word processing, record keeping, problem solving, learning, etc., by utilizing commercially available programs.

Many people will need to use computers and make use of available software without even having a need for engaging in programming, or the actual design of programs. There is also a need for a type of computer literacy, which educators must have, that is involved with the selection of computer hardware and software for specific activities and objectives so that the user's expectations can be met. This type of expertise will include computer user literacy, a knowledge of available and needed programs, the capabilities of the various small computers and their available programs, and the ability to write specifications for their purchase. If needed programs are not available, the educator should be able to design appropriate programs or work closely with the programmer so that specific needs can be met.

Problems associated with the selection of computers and software are increased by (1) the rapid and continuing development of the microcomputer with virtually no standardization, (2) the willingness of consumers to "jump on the bandwagon" too soon before needs assessment and formulation of educational goals and objectives related to the use of microcomputers, and (3) the resulting incompatibility of software with the various microcomputers on the market.

Purchase specifications must be written carefully and with knowledge of available hardware and software capabilities in order to avoid delays and problems with state bid laws that could result in the acquisition of inappropriate hardware and/or software. It is easier to write specifications for large and expensive equipment than for the microcomputers and their software. These smaller items are costly enough, however, to come under the regulation of state bid laws. Consequently, there are many reports of disappointment resulting from purchases through which the items in the lowest bid were not what was actually wanted because the specifications were not written well enough to avoid the improper purchase.

People are gaining computer literacy through various means: workshops such as this one, courses through universities and school systems, independent study, and cooperative sharing of information through recently organized groups. In Alabama we have organized the Alabama Council for Computer Education (ACCE). It's purpose is "to help all Alabama Educational Institutions in the state, both public and private, at the different levels,

to work together so that computing and other revelant needs are met." This will also be a resource sharing group through which we will disseminate reviews of software. Further information about this organization may be obtained form: Microcomputer Laboratory, School of Education, Auburn University, AL 36849 or tel. (205) 826-4529.

What kinds of courses are needed? I suggest that a beginner always inquire about the content of a course that is being considered. Most introductory courses offered in computer science departments have been historically concerned with programming in Basic, Fortran or other computer languages. Ask and determine whether the course is programming, hands-on, or about computers. A first course should deal with software which is already prepared in which the computer is used as a tool. Then you can decide whether you want to learn to program. Most schools of education will be offering appropriate introductory courses for the educator in which the role of the microcomputer in education will be explored.

Electronic Advising Support
Using
Microcomputer Generated Records

Rick Daughenbauch

Department of Educational Media
University of South Alabama (Mobile)

The electronic advising system in this presentation grew out the the need for quick access to information about students for advisement and in the scheduling of classes in the Department of Educational Media at the University of South Alabama. Although this particular program application is used in a university setting, it could be adapted for use in elementary or secondary schools.

In determining which courses are needed by students at which time and in appropriate sequence, paper files, progress charts, or PERT charts can become confusing. They can also require a great amount of time in the scheduling process. A commercially available program, PFS (Personal File System), which can be pruchased for $95 provides the necessary programming for creating and generating these records through an Apple microcomputer. It can be purchased from Software Publishing Company, P.O. Box 50575, Palo Alto, California 94303. Radio Shack has a similar program for the TRS-80, Profile Plus.

While it would be possible to do one's own programming, it seemed that the time required to write such a program would be inordinate when a program was readily available that met our needs. PFS (Personal File System) assists us in the creation of specially designed files for advising and scheduling for the educational media classes.

Student records have been placed on the computer record, thereby creating a data base. By manipulating this data base it is possible to access a student's file in order to find which classes are needed by that student. When the Dean asked for a list of students with a GPA of 3.55 or above for awards night, we found the needed information in five seconds. Normally, it would have taken a day and a half to retrieve such information. We can also access a course record and find who has had, or who has not had a specific course. This information is useful in scheduling classes.

The same program can be used for creating other files such as circulation systems for media and equipment, inventory, and equipment maintenance. In each case a file would be designed for recording and storing appropriate information. The program will also provide for generating mailing labels with a printer.

This is a "friendly" program. It assists the user so that non-programmers can use it, as opposed to an "unfriendly" program which requires the user to tell the program what to do. The program allows us to create our own files, according to our own needs, with up to nine columns of information. They might be scheduling files, advising files, or administrative files and would be stored on separate disks.

We were able to teach the departmental secretary how to record and access student information in 35 minutes. The menu screen gives the user the following options: to create a new file, add new information, search the file, move information, and print information. One program disk is included in the package but it is possible to purchase a duplicate for an additional $15. It is recommended that a duplicate be purchased in case the original disk is lost or damaged.

Interactive Video: A Microcomputer and Video System

Ron Trice

Department of Educational Media
University of Georgia (Athens)

In this interactive video system a small video cassette recorder is controlled by a microcomputer. While it is slower than the interactive laser video system, which has very quick access, it is much cheaper and uses equipment that is often already available for other purposes. It is a means for individualizing instruction at an affordable price.

The demonstration system is composed of an Apple II microcomputer with one disk drive and an electronic interface card which joins the computer with a Panasonic, NV8200, VHS recorder and Sony color monitor. Video tapes in this presentation are demonstration tapes from the Cavri Interactive Video System which show three applications: an industrial training program on soldering, an instructional program on medical diagnosis, and a cataloguing program in which the capability of including pictures of the catalogued art works can be seen.

Information can be stored on video cassettes and used randomly with more effectiveness and accuracy with the microcomputer than when the counter is used in playback for locating specific video frames.

Very few interactive programs are available commercially. Therefore, the purpose of this presentation is to encourage people to create their own programs. There is a commercially available authoring program on a computer disk. Existing video tapes can be utilized in an interactive mode and the microcomputer can be used separately for other purposes.

To produce interactive programs, or to convert existing instructional materials into interactive format, it is necessary to consider all of the elements of instructional design. One must specify the audience, select objectives, select relevant information to be used, and break the information into segments. Additionally, one must choose the branching options to be used. Then, the various segments can be manipulated in any way desired. There are three branching options: simple loop-back, multiple branching, and one that measures the proficiency of the student. The computer can record right and wrong answers, do item analysis and even measure the amount of time taken to press the key.

It is necessary to understand programmed learning concepts and program writing before attempting to design interactive video programs. Also, it takes more time than traditional programs. The result, however, is a much more useful and powerful instructional tool.

Word Processors to Solve Administrative Problems

Dan Wright

Chairman, Department of Educational Media
and
Director, Learning Resource Center
Auburn University

In early 1978, the staff of the Learning Resources Center began to look for more efficient ways to handle scheduling tasks in the center and also in the School of Education. We initially looked for computers and programs; however, we soon discovered that computers had several problems with which we were unable to cope:

1. Computers are very expensive or they were in 1978.
2. Programs were even more expensive and still are.
3. Prepared programs require you to do your jobs the way the computer is programmed. Either that or write the programs yourself--a task that we were not capable of doing in 1978.

We then looked for some other means for solving our problems and we eventually discovered word processors. After attending demonstrations on three different word processors, we finally settled on the A. B. Dick Magna SL. We felt it was the easiest of the three to learn to operate and we knew the A. B. Dick Company and their reputation for service.

We bought three terminals and one printer in 1978. We initially started using the SL to schedule and account for the circulation of AV equipment (about 100 items per day) and for scheduling classrooms for the school. These two applications have been continued without any significant changes and are still being used daily in our center. The two routines have proved to be very efficient in terms of time and effort saved. With them we also believe those tasks are now carried out more effectively.

These two applications were so successful, not only in terms of efficiency but more importantly, in the way our staff and students learned the applications and the equipment, that we have continued to use the SL to solve administrative problems. Today we have 15 terminals, only three of which are used for word processing. The others are used for all sorts of things that we have determined to be problem areas for our operation. We daily use our word processors to:

1. Administer, grade, and post the results of approximately 16,000 tests per quarter.
2. Circulate, maintain circulation records, and sign in the materials from our library.
3. Maintain lists of faculty research interests and match funding possiblities with interests.
4. Monitor students as they progress through their programs and predict enrollment in future classes--determine what classes will be taught.

5. Maintain all the billing records of our copy center to include accounts receivable, income, and the preparation of invoices.
6. Maintain records of off-campus classes and predict classes that will make.
7. Present a branch program of instruction.
8. Prepare from raw data the several different forms of cards needed for our card catalog.

These are but a few of the applications that we have made with our word processors. In addition, we have prepared some applications for public school systems, the latest being a textbook inventory routine for schools.

Keep in mind that we still are finding new applications for the SL even though we at present have a microcomputer lab of 12 Apples. In addition, we have micros being used for several applications appropriate to the micro and also have three terminals to the main frame. We continue to use the SL where possible because it is so very easy to train operators in its use. As an example, we can train a work study student with no previous knowledge of an SL to schedule the circulation of AV equipment in about 15 minutes. Our library circulation routine allows borrowers to use the SL with no previous training. Our staff now includes programmer personnel, so we do have the capability to use micros. However, we still feel there are jobs for micros and other jobs for word processors.

Sterne Library
Automated Library System

The Sterne Library at the University of Alabama in Birmingham has been involved in the development of an automated library system that has resulted in the successful design and implementation of two phases of a five-phase development plan.

Acquisitions and Circulation Subsystems have been operational without a parallel manual system since Fall 1979 and Fall 1980, respectively. The subsystems have proven their ability to provide the staff and the user population with accurate and timely information on the collection's availability and use:

- The System provides staff with accurate information in a variety of formats, enhancing both reference services and collection development;
- Duplication of orders in the acquisitions process is almost non-existent;
- Fund Accounting is done automatically;
- The System provides complete information about collection use by user population and by classification;
- The System also monitors and controls fine violations, lost material and billings.

The Automated System is supported by an IBM 4341-11 at the University's Central Computing Facility. The terminals in the library are IBM 3278's linked to the computer via leased telephone lines.

The System uses OCR (Optical Character Recognition) equipment to read labels generated via the 4341-11. These are hand held scanners and are connected in line with the terminal keyboard. Operators can use either the scanner or the keyboard for data entry.

The acquisitions subsystem is an interactive system designed to monitor the order process. The system is designed to assist in the following functions:

- pre-order searching
- data entry
- purchase order generation
- receiving and invoice control
- automatic claiming
- fund accounting
- reporting

The system produces reports on the orders placed, checks written, orders outstanding, and fund balances. These reports are by academic department as well as funding source.

The circulation subsystem is an interactive system designed to monitor and control the collections of the Library. It is designed to assist in the following functions:

- patron entry/validation/editing
- patron activity
- class reserves
- patron holds
- book record entry/editing
- book searching by call nimber, author, title, OCLC member
- check in/check out
- overdues and billings

Book records for the system are generated via the OCLC tape subscription services on a weekly basis. The update procedure automatically establishes the book record, the loan period, and circulation restrictions, if any. If a record is found, the update program verifies the record against the data base and updates it.

Several other subsystems are in the discussion or specification stage:

- serials check in
- online catalog
- audiovisual booking

Additional information about the Sterne Library automated System can be obtained by contacting: Dr. Jerry W. Stephens, Assistant Director for Administrative Services, Mervyn H. Sterne Library, University of Alabama in Birmingham, University Station, Birmingham, Alabama 35294. Telephone: (205) 934-6360.

Project BEST

Project BEST (Basic Education Skills through Technoloby) is a cooperative effort involving both the federal, state, and local governments and the private sector in the planning and use of modern information technologies to improve the effectiveness of basic skills teaching and learning. It is funded by the Division of Educational Technology of the U.S. Department of Education. BEST is a twenty-one month contract, which began in November, 1981.

A primary goal of the project is to create a network of states and professional organizations that will encourage the exchange of ideas, people and information, and that can continue to grow and to function after the work of the project is completed.

The project will provide training and technical assistance to State Education Agencies (SEAs) in the areas of basic skills and technology. Increasing the abilities of SEAs to utilize advanced telecommunications technology and adding to their awareness of successful applications in the field will, in turn, strengthen state efforts to improve Local Education Agency and school capabilities.

The project staff will develop a variety of products, services, and linkages with people and resources in the public and private sectors to accomplish the above goals. They will include:

- written materials on the use of technology in basic skills education
- audio-visual teleconferencing to present information on successful applications in the field
- an electronic mailbox to encourage information sharing
- a data bank that will include information on software; names of local experts available to assist SEAs and local school districts; and bibliographies of materials on educational technology, the use of technology in education, and the application of technology to basic skills education
- a series of ongoing working relations with industry, professional associations, state, regional and local education groups

Technology will not only be the focus of the project, but also the means by which sharing and gathering of information will take place.

Satellite teleconferencing and telecommunication linkages will be used for rapid exchange of information; microcomputers will be used to access various data bases, and the electronic mailbox will be used to assist with the specific needs of members of the network.

The Association for Educational Communications and Technology (AECT) is the prime contractor for Project BEST. AECT has formed a consortium with two subcontractors, Applied Management Sciences, Inc. (AMS) and the Maryland Instructional Television Division (MITV).

For information write to: Project BEST, Association for Educational Communications and Technology, 1126 Sixteenth Street, N.W. Washington, D.C. 20036. Telephone (202) 466-3361.

COMPUTER RESOURCE LIST

REFERENCE

Microcomputer Directory
Gutman Library
Harvard Graduate School of Education
Appian Way
Cambridge, MA 02138

Microcomputer Directory: Applications in Educational Settings (softback) was compiled by the Reference Department staff at the Harvard Graduate School of Education. The Directory describes projects that are using microcomputers for instructional and administrative purposes at 276 sites in the United States. Arranged by state and including a subject index, the Directory costs $5.00/copy. Mail check/order to address above.

SCOPE AND SEQUENCE

K-12 Course Goals in Computer Education (softback). The guide contains goals for use in planning and evaluating elementary and secondary school curricula in computer education. Purpose: to help decide what should be learned not how. Sample course goals: "Values and computer education," "Processes of inquiry and problem-solving," "Calculators," "Careers," "Uses," "History." Produced with federal funds by Northwest Regional Educational Laboratory in Portland. Commercial-Educational Distributing Services, P.O. Box 8723, Portland, Oregon 97208. $12.00

SOFTWARE/SYSTEMS EVALUATORS (SAMPLE)

Conduit
P.O. Box 388
Iowa City, Iowa 52240
(319) 353-5789

Conduit reviews software, predominantly college (upper high school) level CAI in 12 areas of study: e.g., physics, chemistry, psychology, biology, humanities. Initially funded in the 60's by N.S.F., Conduit began reviewing materials for microcomputers in 1979. Suggestion: Request demo kit, Personal Computers: Reviewed and Tested Materials which includes a diskette sample of approximately 10 software packages plus reviews written by teachers; $75.00 or request free catalog of Standard Materials or Micro Materials.

Microsift
(Part of Northwest Regional Educational Laboratory)
300 S. W. Sixth Avenue
Portland, Oregon 97204
Attention: Don Holznagel, Coordinator

Funded by N. I. E., Microsift is "a clearinghouse for microcomputing in education:" instructional software and teacher information. Focus: instructional applications

for levels K-12. Purpose: to collect, evaluate and disseminate materials and information. First newsletter to review packages due soon.

Minnesota Educational Computer Consortium (MECC)
2520 Broadway Drive
St. Paul, Minnesota 55113

This large state organization has many facets. Of direct interest, MECC shares expertise in hardware, software and courseware. The consortium also develops materials, e.g., high school economics course on videodisc and computers, two computer literacy studies. Send for more information about MECC and/or a list of programs they distribute. Micro emphasis is the Apple.

CLASSROOM - READY MATERIALS (SAMPLE)

Adventure of the Mind (videotapes and teacher guide). The six 15-minutes videotapes subtitled "A Series on Personal Computing." E.g., "Computers as Personal Tools, "Components and Functions," "Communication," "Data Processing," "Advantages and Disadvantages" and "Impact on the Individual." In Florida, contact your ITV Coordinator or Instructional TV and Radio, Florida Department of Education, Tallahassee, Florida 32301, (904) 488-7101. Outside Florida, contact ADV Children's TV International, 5201 Leesburg Pike, Suite 1100, Falls Church, Virginia 22041, (703) 370-2707.

Fast Forward and **Fast Forward II** (videotapes and support materials). Two series of 13 half-hour videotapes about advances in electronics and computer technology. E.g., "Education," "Microprocessor Revolution," "Personal Computing," "Global TV Politics," "Biomedics," "Computer Simulation," Electronics Medicine," "Music," "TV." In zippy, fast-forward format, the tapes are good supplements for students and adults. Used in training teachers in Computeronics; teachers then use with their students. In Florida, contact your ITV Coordinator or Instructional TV and Radio, Florida Department of Education, Tallahassee, Florida 32301, (904) 488-7101. Outside Florida, contact Fast Forward, TV Ontario Marketing, P.O. box 200, Station 2, Toronto, Ontario, Canada M4T2T1.

COMPUTER MAGAZINES/JOURNALS (SAMPLE)

BYTE (journal). This monthly "small systems journal" is geared to the hobbyist who would like to build a system. The journal is more complex than Creative Computing magazine. While it contains advanced information about computer technology, buy a copy just to learn what's new in the field and all the addresses you need for pursuing micros. BYTE Subscriptions, Box 590, Martinsville, NJ 08836, (800) 258-5485. $19.00/year.

The Computing Teacher (journal). Published by a non-profit professional organization "for people interested in the instructional use of computers at the pre-college level: "elementary through secondary and teacher education. Includes teaching the use of computers, about computers and their impact upon the general curriculum; also calculators in education. c/o Computing Center, Eastern Oregon State College, La Grande, Oregon 97850. $14.50 (9 issues)/year; $27.50/2 years; $38.00/3 years.

Creative Computing (magazine). A bi-monthly magazine which contains interesting articles, puzzles, games, etc. Scan issues for applicable articles. Subscriptions: P.O. Box 789-M, Morristown, NJ 07960. $20.00/year.

Electronic Learning, "The Magazine of Technology in Education." Lively, non-technical articles in readable format for educators, published by Scholastic, Inc. First issue, September/October, 1981. Write Mary Vattone, Scholastic, 900 Sylvan Avenue, Englewood Cliffs, NJ 07632. $15/charter subscription (6 issues).

Interface Age (magazine). Hobbyist-oriented, like BYTE, this publication is subtitled "Computing for Home and Business Applications." Get a copy to learn about amazing advancements in the field. Or just read it for the ads to see what's available for personal and professional use. McPheters, Wolfe & Jones, 16704 Marquardt Avenue, Cerritos, California 90701. $18.00/year

Popular Computing (quarterly). Formerly onComputing, the publication is described as "entertaining, informative and uncomplicated" for the professional person who is "aware of the personal computer as a tool for. . .education. . .and other applications." Edited by the staff of BYTE, the monthly magazine includes creative uses of the computer, books for the user and how/where to buy. Write Popular Computing, Inc., 70 Main Street, Peterborough, NH 03301. $15/year, Subscriptions: P.O. Box 307, Martinsville, New Jersey 08836.

Softalk (magazine). This monthly is geared to Apple microcomputers; includes articles about technology, applications, software and innovators. E.g., "Apple and Cable TV," "The Miraculous Modem," "Portrait of a Programmer." Subscriptions: complimentary to Apple owners in US; multiple or nonApple-owners, $10.00/year. Softalk Publishing, Inc. 10432 Burbank Boulevard, North Hollywood, CA 91601.

SoftSide (magazine). A monthly BASIC software magazine for people interested in "authoritative, reliable information about home computers." Facts, figures and advice for students through working parents. Included are software listings for TRS-80, Apple, Atari. Softside Publications, 6 South Street, Milford, NH 03055. $24.00/year.

COMPUTER JOURNALS

Addison - Wesley
2725 Sand Hill Road
Menlo Park, CA 94025

AEDS Journal
1201 Sixteenth Street, N.W.
Washington, D.C. 20036

AEDS Monitor
St. Paul Public School
360 Colborne Street
St. Paul, MN 55102

Apple ED News
10260 Bandley Drive
Cupertino, CA 95014

Byte
70 Main Street
Peterborogh, NH 03458

Classroom Computer News
Box 266
Cambridge, MA 02138

Compute
Box 5119
Greensboro, NC 27403

Computer Using Educators
Mountain View High School
Mountain View, CA 94041

(The) Computing Teacher
Computing Center
Eastern Oregon State College
La Grande, OR 97850

Course Ware
4919 North Millbrook, #222
Fresno, CA 93726

Creative Computing
P. O. Box 789-M
Morristown, N. J. 07960

Creative Publications
"Computer Products Catalog"
Box 10328
Palo Alto, CA 94303

Datamation
666 Fifth Avenue
New York, NY 10103

Dilithium Press
"32 BASIC Programs for the
PET Computer"
P. O. Box 92
Forest Grove, OR 97116

Education Computer Systems Group
PK3-1/M40
129 Parker Street
Maynard, MA 01754

Educational Computer
P. O. Box 535
Cupertino, CA 95015

Electronic Learning
902 Sylvan Avenue
Englewood Cliffs, NJ 07632

Info World
530 Lytton Avenue
Palo Alto, CA 94301

Interface Age
McPheters, Wolfe and Jones
16704 Marquardt Avenue
Box 1234
Cerritos, CA 90701

Kilobaud Microcomputing
P. O. Box 997
Farmingdale, NY 11737

Micro 6502 Magazine
P. O. Box 6502
Chelmsford, MA 01824

Microcumpter News
Benwill Publishing Corporation
1050 Commonwealth Avenue
Boston, MA 02215

Microcomputing
Elm Street
Peterborough, NH 03458

Mini-Metro Systems
Cahners Publishing
Company
221 Columbus Avenue
Boston, MA 02116

Popular Computing
70 Main Street
St. Peterborough, N.H.
03458

Personal Computing
1050 Commonwealth
Avenue
Boston, MA 02215

Robert Purzers Magazine
P. O. Box 466
El Dorado, CA 95623

Recreational Computing
People's Computer Compan
1263 El Camino Reak,
Box E
Menlo Park, CA 94025

Silicon Gulch Gazette
Computer Faire
333 Swett Road
Woodside, CA 94062

SoftSide
6 South Street
Milford, NH 03055

T.H.E. Journal
Synergy, Inc.
P. O. Box 992
Acton, MA 01720

Educational Technolo
140 Sylvan Avenue
Englewood Cliffs, NJ
07632

Electronic Education
Suite 220
1311 Executive Cente
Tallahassee, FL 3230

SAMPLE OF
SOFTWARE VENDORS

Apple Computer, Inc.
10260 Bandley Drive
Cupertino, CA 95014

Applecatons
21630 West Eleven Mile Road
Suite 103
Southfield, MI 48076

Bertamax, Inc.
311 West McGraw
Seattle, WA 98119

Bluebird's Inc.
2267 23rd Street
Wyandotte, MI 48192

Blue Lakes Software
3240 University Avenue
Madison, WI 53705

Cavri Systems, Inc.
26 Trumbull Street
New Haven, CT 06511

Charles Mann & Associates
7594 San Remo Trail
Yucca Valley, CA 92284

Compak, Inc.
P. O. Box 14852
Austin, TX 78761

Computer Systems Design Group
3632 Governor Drive
San Diego, CA 92122

Computer Systems
International, Inc.
539 Durie Avenue
Closter, NJ 07624

Computer Bus. Syst. of MP
1707 View Street
Myrtle Point, OR 97458

Conduit
P. O. Box 388
Iowa City, IA 52240

Cook Computer Company
1903 Bailey Drive
Marshalltown, IA 50158

Cow Bay Computing
P. O. Box 515
Manhasset, NY 11030

Creative Computing
P. O. Box 789-M
Morristown, NJ 07960

Curser Magazine
Box 550
Goleta, CA 93017

Edu-Ware Services, Inc.
22035 Burbank Boulevard, #223
Woodland Hills, CA 91367

Educational Activities, Inc.
1937 Grand Avenue
Baldwin, NY 11510

Educational Software Prof, Ltd.
38347 Grand River
Farmington Hill, MI 48018

Educational Programs
P. O. Box 2345
West Layfayette, IN 47906

George Earl
1302 South Gen. McMullen
San Antonio, TX 78237

Ideatech Company
P. O. Box 62451
Department 7220
Sunnyvale, CA 94088

Instant Software
80 Pine Street
Peterborough, NH 03458

Interactive Education
Department 16D
2306 Winters Drive
Kalamazoo, MI 49002

J & S Software
140 Reid Avenue
Port Washington, NY 11050

Kyde Tyme Project
Ted Perry
2331 St. Marks Way
Sacramento, CA 95825

Level IV Products, Inc.
322238 Schoolcraft
Suite F8
Livonia, MI 48154

Life Software Ltd.
946 Van Horne Avenue
Willowdale, Ontario M2J-2T1
Canada

Malibu Microcomputing
23910A De Ville Way
Malibu, CA 90265

Mean
256 North Washington Street
Falls Church, VI 22046

Med Systems Software
P. O. Box 2674
Chapel Hill, NC 27514

Micro Gnome
5843 Montgomery Road
Elkridge, MD 21227

Micro Learning Ware
Box 2134
North Mankato, MN 56001

Micro Power and Light Co.
1108 Keystone
13773 North Central Expressway
Dallas, TX 75243

Microcomputer Workshops
10 Elizabeth Place
Armonk, NY 10504

Microphys Programs
2048 Ford Street
Brooklyn, NY 11229

Monument Computer Service
Village Data Center
Box 603
Joshua Tree, CA 92284

Muse Software
330 North Charles Street
Baltimore, MD 21201

Oregon Software
2340 SW Canyon Road
Portland, OR 97201

Personal Software, Inc.
592 Weddell Drive
Sunnyvale, CA 94086

The Pet Program Exchange
Box 316
Montgomeryville, PA 18936

Program Design, Inc.
11 Idar Court
Greenwich, CT 06830

Programmer International, Inc.
3400 Wilshire Boulevard
Los Angeles, CA 90090

Programs for Learning, Inc.
P. O. Box 954
New Milford, CT 06776

Programmer Software Exchange
2110 North Second Street
POB 199
Cabot, AR 72023

Radio Shack Department
Cma-81-1-161
1300 One Tandy Center
Fort Worth, TX 76102

Sliwa Enterprises
P. O. Box 7266
Hampton, VI 23666

Steketee Educational Software
4639 Spruce Street
Philadelphia, PA 19139

The Bottom Shelf
751 Dekalb Industrial Way
Decatur, GA 30033

Thesis
P. O. Box 147
Garden City, MI 48135

TI Source (Texas Instruments)
P. O. Box 191
Rye, NY 10580

TYC Software
40 Stuyvesant Manor
Geneso, NY 14454

-30-

MICROCOMPUTER SOFTWARE
CATALOGUE LIST

The following commercially produced catalogues contain sources and sometimes evaluations of microcomputer software. No endorsement of quality is implied by entry on this list. Address and cost information may change over time.

I. General Catalogues--Educational Applications

Name: Education Software Directory (Apple II Edition)
Source: Sterling Swift Publishing Co., P.O. Box 188, Manchaca, TX 78652

Cost: $9.95 (education price)

Name: School MicroWare
Source: Dresden Associates, P.O. Box 246, Dresden, ME 04342

Cost: $20/year (includes updates)

Name: MARCK No 2
Source: MARCK 280 Linden Avenue, Branford, CT 06405

Cost: $4.95

Name: Queue Catalog No. 4
Source: Queue, 5 Chapel Hill Drive, Fairfield, CT 06432

Cost: $8.95 single issue

Name: Selected Microcomputer Software
Source: Opportunities for Learning, Inc., 8950 Lurline Avenue, Chatsworth, CA 91311

Cost: Free

Name: Scholastic Microcomputer Instructional Materials
Source: Scholastic Inc., 904 Sylvan Avenue, Englewood Cliffs, NJ 07632

Cost: Free (Moneyback guarantee on software)

Name: K-12 MicroMedia
Source: P.O. Box 17, Valley Cottage, NY 10989

Cost: Free (30 day moneyback guarantee on software)

continued

II. General Catalogues--Several Fields

These catalogues list software for many fields including education, from a variety of vendors.

Name: Radio Shack TRS-80, Applications Software Sourcebook
Source: Radio Shack, Box 17400, Fort Worth, TX 76102 (Available in Radio Shack computer shops)

Cost: $1

Name: TRS-80 Software Source
Source: COMPUTERMAT, P.O. Box 1664, Lake Havasu City, AZ 86403

Cost: $6/issue; $15/year

Name: 80 Software Critique
Source: RWC Microcomputing Services, P.O. Box 134, El Dorado, CA 95623

Cost: $7/issue; $24/year

Name: Atari Program Exchange
Source: Atari Inc., P.O. Box 427, 155 Moffett Park Drive, Sunnyvale, CA 94086

Cost: $1/issue

MICROCOMPUTER MANUFACTURERS

APF Electronics, Inc.
Imagination Machine
444 Madison Avenue
New York, NY 10022

Apple Computer, Inc.
10260 Bandley Drive
Cupertino, CA 95014

Atari
800 or 400
1265 Borregas Avenue
Department C
Sunnyvale, CA 94086

Commodore Pet
950 Rittenhouse Road
Norristown, PA 19401

Compucolor
Compucolor II Renaissance Machine
P. O. Box 569
Norcross, GA 30091

Cromemco, Inc.
280 Bernardo Avenue
Mountain View, CA 94043

Exidy Sorcerer
969 Maude Avenue
Sunnyvale, CA 94086

Heath Company
Heathkit
Benton Harbor, MI 49022

Hewlett-Packard Company
HP-85 Inquiries Manager
1507 Page Mill Road
Palo Alto, CA 94304

Intelligent Systems Corporation
(See Compucolor)
Intecolor Drive
225 Technology Park
Atlanta-Norcross, GA 30092

Mattell
Intellivision
5150 Rosecrans Avenue
Hawthorne, CA 90250

Motorola
5005 East McDowell
Phoenix, AZ 85008

North Star
Horizon II
1440-4th Street
Berkley, CA 94710

Ohio Scientific
Challenger Series
1333 South Chillocothe
Aurora, OH 44202

Radio Shack
TRS-80
1300 One Tandy Center
Fort Worth, TX 76192

Sinclair Research Corporation
Sinclair Microcomputer ZX80
50 Staniford Street
Suite 800
Boston, MA 02114

Smoke Signal Broadcasting
31336 Via Colinas
Westlake Village, CA 91362

Southwest Technical Products
SWT PC 6800
219 West Rhapsody
San Antonio, TX 78216

Synertek
3001 Stender Way
Santa Clara, CA 95051

Texas Instruments
TI 994
12501 North Central Expressway
Dallas, TX 75222

IBM
Suite 1600
600 W. Peachtree St., NW
Atlanta, GA 30308

SRMLC PARTICIPANTS

ALEXANDER NNY DUNDALK COMMUNITY COLLEGE
7200 BOLLICKS PT. RD. DUNDALK MD 21222
000-282-6700 35

BAILEY TEDDY TEACHER CORPS
P.O. BOX 247 EASTABOGA AL 36260
205-831-5911 35

BASCOMB ANNIE R. 2104 CARVER AVE.
TUSKEGEE AL 36088
205-727-6179 0

BAYLOR JOHN G. UNIVERSITY OF SOUTH ALABAMA
MOBILE AL 36688
205-460-6201 35

BEAL BETTY D. 3429 RIDGECREST DRIVE
BIRMINGHAM AL 35216
205-822-1865 205-325-5595 35

BENJAMIN DORIS ITAWAMBA JR. COLLEGE
FULTON MS 38843
601-862-3839 601-862-3101 35

BENNER FAITH 1289 BRANCHWATER LANE
VESTAVIS HILLS AL 35216
205-822-3537 205-823-4044 25

BIGGS ANN JEFFERSON DAVIS ST. JR.COLLE
PO DRAWER 1569 BREWTON AL 36427
205-867-4832 25

BLOODSWORTH GASTON 1010 WILDWOOD RD.
AIKEN SC 29801
803-648-5846 35

BOOKER BARBARA CHARLOTTESVILLE CITY SCHOOLS
4TH ST. N.W. CHARLOTTESVILLE VA 22901
804-293-5268 35

BOSTICK GEORGE NORTH CAROLINA ST UNIVERSITY
NC
919-737-3971 35

BRASHER PAULETTE W. RT 1 BOX 3B
CHELSEA AL 35043
205-678-6120 205-663-3682 25

BROCK ELMA P.O. BOX 101
NEW BROCKTON AL 36351
205-894-6653 205-598-4833 35

BROOKS C. MICHAEL P.O. BOX 61
UNIVERSITY STATION BIRMINGHAM AL 35294
205-934-3053 35

BROSE WILLIAM P. 438 HARRY S. TRUMAN DRIVE
UPPER MARLBORO MD 20772
301-350-7838 301-350-7838 25

BRYAN SARA P. 2516 SAVOY ST.
BIRMINGHAM AL 35226
205-822-3248 205-822-0600 25

BURKETT CHERRELL C. ROUTE 2, BOX 112B
MORRIS AL 35116
205-647-1546 205-631-6594 25

CLARK NORVELLE B. STATE DEPT. OF EDUCATION
MONTGOMERY AL 36102
205-281-1286 205-832-3290 25

CLAYTON DON COLLEGE OF EDUCATION
UNIVERSITY OF MONTEVALLO MONTEVALLO AL 35115
205-000-0000 205-665-2521 35

COOK RUSSELL J. BOX 3136 DELTA STATE UNIV.
CLEVELAND MS 38733
601-843-0535 35

CULLINS DICK BOX 10367
TRIDENT TECHNICAL COLLEGE CHARLESTON SC 29411
803-572-6090 35

CUMBEE CARROLL F. JR. 3201 GEORGETOWN PLACE
BIRMINGHAM AL 35216
205-823-5298 35

CUPPS JANICE CORNER SCHOOL RT.2
WARRIOR AL 35180
205-647-9711 25

DABNEY GLEN BOX 26246
BIRMINGHAM AL 35226
205-822-2710 25

DAUGHENBAUGH RICHARD L. UNIVERSITY OF SOUTH ALABAMA
MOBILE AL 36688
205-460-6201 35

DAWKINS GWENDOLYN CORNER SCHOOL RT.2
WARRIOR AL 35180
205-647-9711 25

DEAN ROBERT V. CENTER FOR MEDIA-BASED INST.
GEORGIA TECH ATLANTA GA 30332
404-894-3364 35

DENMAN MARGARET W. P.O. BOX 056
WESTMINSTER MD 21157
35

DOWNING ANN BOX 26246
BIRMINGHAM AL 35226
205-822-2710 25

EDWARDS ANNE 109 CAMELOT APTS
DOTHAN AL 36301
205-749-6855 205-794-0456 25

ELLISON JOSEPH L. 154 GREEN HARBOR
JACKSON MS 39206
601-981-5273 601-968-2514 25

ERNEST PAT COLLEGE OF EDUCATION
UNIVERSITY OF MONTEVALLO MONTEVALLO AL 35115
205-665-2521 35

ERVIN ROBERT M. 7832 RUGBY CT. SO.
BIRMINGHAM AL 35206
205-833-6153 205-934-2379 35

FANCHER BILL E. 191 CHEROKEE
MONTEVALLO AL 35115
205-665-2317 35

FANCHER DAVID BLUFF PARK SCHOOL
569 PARK AVE. BIRMINGHAM AL 35226
205-822-0600 25

FARRAR BILL RT. 1 BOX 39
GENEVA AL 36340
205-684-9165 205-684-9379 35

FARRAR FLOREE J. RT. 1 BOX 39
GENEVA AL 36340
205-684-9165 205-684-9379 35

FLORES RONALD C. BOX 412A MASAS
GURABO PR 00658
809-765-4646 0

FLYNN PAUL SPENCER WESTERN CAROLINA UNIV.
CULLOWHEE NC 28723
704-293-9026 704-227-7415 35

GANTT VERNON DEPT. OF SPEECH & THEATRE
MURRAY STATE UNIVERSITY MURRAY KY 42071
502-753-9674 502-762-4483 35

GARCIA EDWARD BOX 5146 SOUTHERN STATION
UNIV OF SO. MISSISSIPPI HATTIESBURG MS 39406
601-264-5369 601-264-4233 35

GARDNER C. HUGH 607 ADERHOLD
UNIV. OF GEORGIA ATHENS GA 30602
404-542-3810 35

GRIFFIN		ETHEL T.	3361 SPRING VALLEY CT.		
			BIRMINGHAM	AL	352XX
205-967-1527			25		
GUITART		MIKE H.	2161 EDINBURGH DR.		
			MONTGOMERY	AL	36116
205-277-3206	205-832-5810		35		
HARDIMAN		RHONDA	CORNER SCHOOL RT.2		
			WARRIOR	AL	35180
	205-647-9711		25		
HARRELL		ROBERT	CLAYTON JUNIOR COLLEGE		
P.O. BOX 285			MORROW	GA	30260
	404-961-3522		35		
HART		BARBARA	BLUFF CITY ELEM. SCHOOL		
			EUFAULA	AL	XXXXX
	205-687-3593		35		
HART		J.T. JR.	BLUFF CITY ELEM. SCHOOL		
			EUFAULA	AL	XXXXX
	205-687-3593		35		
HAYNIE		JOAN P.	P.O. DRAWER 1101		
			JACKSON	MS	39205
	601-982-6211		35		
HEATH		JEAN B.	1601 APPLEBY BLVD.		
			FLORENCE	AL	35630
205-766-3169	205-767-5260		25		
HILL		JACQUELYN B.	PAINE COLLEGE		
1235 15TH ST.			AUGUSTA	GA	30910
	404-722-4471		35		
HOLLIMAN		RUTH	ROUTE 4 BOX 84		
			GORDO	AL	35466
205-364-7274	205-375-8151		15		
HUFFMAN		STANLEY A. JR.	102 PATTON HALL		
VIRGINIA TECH			BLACKSBURG	VA	24061
			35		
HUG		WILLIAM E.	399 PONDSEROSA DRIVE		
			ATHENS	GA	30605
	404-542-3810		35		
JENKINS		DAVID M.	N.C. STATE UNIVERSITY		
118 RICKS HALL			RALEIGH	NC	27607
	919-737-2800		35		
JOHNSON		HOWARD	BOX 421		
			DEBARY	FL	32713
305-668-8381			35		

JOHNSON SCOTT R. P.O. BOX 1954
COASTAL CAROLINA COLLEGE CONWAY SC 29526
803-347-3161 35

JONES GRACE 3772 GLASS DRIVE
BIRMINGHAM AL 35223
205-969-2706 25

JONES RAY 4419 PLUMMER DRIVE
MONTGOMERY AL 36106
205-279-8456 205-832-5810 35

KING BEVERLY L. 4043 MONTEVALLO ROAD
BIRMINGHAM AL 35213
25

KING SANDRA L.B. WALLACE ST JR COLLEGE
ANDALUSIA AL 36420
205-222-6591 25

KIRK ELOISE ROOM 410
STATE OFFICE BUILDING MONTGOMERY AL 36130
205-832-3290 35

KNIGHT ANNA 2347 DARTMOUTH DRIVE
BIRMINGHAM AL 35226
205-822-7119 35

KNIGHT MELVIN 2347 DARTMOUTH DRIVE
BIRMINGHAM AL 35226
205-822-7119 205-934-3427 35

LAUGHLIN JEANNINE BOX 5146 SOUTHERN STATION
HATTIESBURG MS 39401
601-266-7167 35

LECHNER JUDITH V. 719 MERCER CIRCLE
AUBURN AL 36830
205-821-4484 35

LIGHTFOOT ROBERT M. STATION #81
UNIVERSITY OF MONTEVALLO MONTEVALLO AL 35115
205-000-0000 205-665-2521 35

MAJOR LINDA P.O. BOX 1647
COLUMBIANA AL 35051
205-669-6302 205-669-6796 25

MARTIN NINA RT.#3 - BOX 612
COTTONDALE AL 35453
205-556-2968 205-348-5033 35

MCCAIN MARY M. 548 COLLETTE ST.
BIRMINGHAM AL 35214
25

MCGARITY	MARY SUE	1416 SUTHERLAND PLACE			
		BIRMINGHAM		AL	35209
205-879-6128	205-934-4892	35			
MCGRADY	SUZANNE J.	6010 SHADYWAY LANE			
		CHATTANOOGA		TN	37416
615-344-9841	615-698-3410	35			
MCKITTRICK	JIM	P.O. BOX 61			
UNIVERSITY STATION		BIRMINGHAM		AL	35294
	205-934-3053	35			
MIKAN	KATHLEEN	2350 MT. OAKS LANE			
		BIRMINGHAM		AL	35226
205-823-5062	205-934-4837	35			
MILLER	THOMAS E.	1300 E. SAMFORD AVE.			
		AUBURN		AL	36830
205-821-1914	205-826-4529	25			
MORK	D.D.	9200 SANDBURG AVE.			
		CHARLOTTE		NC	28213
704-597-1496	704-597-2437	35			
MORTON	DAVE	CORNER SCHOOL RT.2			
		WARRIOR		AL	35180
	205-647-9711	25			
MUIR	DUANE	RT. 7 FOXWOOD LANE			
		FRANKLIN		TN	37064
615-790-0882	615-741-1259	35			
MULLENIX	HAZEL J.				
		CARROLLTON		AL	35447
205-364-7808	205-367-8102	15			
NORMAN	GLADYS W.	RT. 15			
BOX 211C		BIRMINGHAM		AL	35224
	205-788-9017	25			
O'GRADY	F.	BOX 26246			
		BIRMINGHAM		AL	35226
205-822-0391	205-822-2710	35			
OSBURN	LINDA	1840 STONE ROAD			
		MIDFIELD		AL	35228
205-923-3015	205-788-5831	10			
PARMAN	PAMELA	1715 WASHINGTON PIKE			
		KNOXVILLE		TN	37917
		35			
PATTISHALL	C.H.	P.O. BOX 444			
		MARIETTA		GA	30061
	404-422-8770	35			

POOLE JANETT P.O. DRAWER 369
DELTONA FL 32725
305-574-3994 800-621-2131 35

PRESSLEY NANCY 103 DEERFIELD DRIVE
ENTERPRISE AL 36330
205-347-9697 25

RASCO DARLENE H. 205 PITTS DRIVE
COLUMBIANA AL 35051
205-669-9636 205-669-6796 25

RECK JAN CLAYTON JUNIOR COLLEGE
P.O.BOX 285 MORROW GA 30260
404-961-3522 35

REDDITT JANEL JEFFERSON DAVIS ST JR COLLEG
PO DRAWER 1569 BREWTON AL 36427
205-867-4832 25

ROGERS MICHAEL CHS-DEAN'S OFFICE
GEORGIA STATE UNIVERSITY ATLANTA GA 30303
404-658-3067 35

SANDOVAL HUGO F. 369 LYNN DRIVE
NASHVILLE TN 37211
615-833-4666 800-251-2561 35

SATISFIELD BETTY P. 17 - 13TH AVENUE WEST
BIRMINGHAM AL 35204
205-252-2971 25

SCOTT ANN E. 804 COLLEGE AVE.
BIRMINGHAM AL 35209
205-942-7669 35

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BIRMINGHAM AL 35234
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ATHENS GA 30605
404-542-3810 25

STONE RUTH J. RT.7
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205-332-0406 35

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DELTONA FL 32725
305-574-3521 305-322-1252 35

TAYLOR KAY CORNER SCHOOL RT.2
WARRIOR AL 35180
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TRICE RON 607 ADERHOLD HALL
UNIV. OF GEORGIA ATHENS GA 30602
404-549-5709 404-542-3810 35

TURNER PHILIP 1 SKYLINE DRIVE
TUSCALOOSA AL 35405
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JEFFERSON STATE JR. COLLEGE BIRMINGHAM AL 35215
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205-647-9711 25

ZSIONCHKOVSKY BERNADETTE 1008 HARPETH VALLEY COURT
NASHVILLE TN 37221
615-741-1259 615-646-1881 35

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